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60 STATE STREET			CORRIELUS, JEAN B	
BOSTON, MA 02109				
		ART UNIT	PAPER NUMBER	
		2611		
		NOTIFICATION DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/595,128

Applicant(s)

PRATT ET AL.

Examiner

Jean B. Corielus

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/28/10.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10-22 and 98 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10-22 and 98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-848)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/28/10
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

Terminal Disclaimer

1. The terminal disclaimer filed on 12/28/10 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on US Application No. 12/815,189 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Specification

2. The disclosure is objected to because of the following informalities: please delete reference to "claimed" and "preceding claim" in the specification, see for instance, page 4, line 10-11.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 4-8, 10-22 and 98 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites "modulating the

carrier signal by at least one subcarrier modulation signal to generate the navigation ranging signal". However the specification, as filed, does not teach the generation of "navigation ranging signal" by modulating a carrier signal by at least one subcarrier modulation signal, as presently claimed. Claims 4-8, 10-22 and 98 are likewise rejected because of their dependency to a rejected claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 4 and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori US Patent No. 5,745,535 in view of Dar et al US Patent No. 4,809,006.

As per claim 1, Mori discloses a method and apparatus comprising modulating a carrier signal **Wc** by a plurality of subcarrier modulation signals (note col. 1, lines 35-48, lines 59-67), the subcarrier modulation signal uses 16QAM modulation scheme, note col. 1, line 43, as known in the art a 16 QAM modulation scheme has 3 amplitude levels (note US patent application publication no. 2007/0047637 paragraph 0070 and fig. 4 that shows a 16QAM modulation scheme having 3 levels). However, Mori fails to teach that the modulated signal is a navigation ranging signal. Dar et al teaches a ground station 11 configured to modulate a carrier signal with a modulated subcarrier signal in modulator 27 to produce a ranging signal for transmission to a satellite 13 (note figs. 1

and 2, col. 2, lines 7-8, lines 44-47). It would have been obvious to one skill in the art to have used the modulated signal as a ranging signal in the manner taught by Dar et al in order to provide the added control functions for satellite orbiting as taught by Dar et al see col. 1, lines 35-36.

As per claim 4, see rejection of claim 1 above.

As per claim 13, as applied to claim 1 above, Mori teaches every feature of the claimed invention but does not explicitly teach the further limitation of deriving the amplitudes from a plurality of phase states. However, selecting the amplitudes from a plurality of phase states would have been in the purview of one skill in the art as such would have enabled the amplitude of the signal that fit predetermined criterion so as to generate only desired modulated signal.

As per claim 14, providing phase states that are equally angularly distributed around the unit circle would have been in the purview of one skill in the art for the reason provided above with respect to claim 13.

As per claim 15, providing amplitudes of equal duration would have been in the purview of one skill in the art for the reason provided above with respect to claim 13.

As per claim 16, providing amplitudes of unequal duration would have been in the purview of one skill in the art for the reason provided above with respect to claim 13.

As per claim 17, it would have been obvious to one skill in the art to quantize the durations according to an associated clock signal so as to satisfy requirement of the system.

As per claim 18, it would have been obvious to one skill in the art to define the associated phase states according to mutually orthogonal axes so as to ensure that interference between the carrier signals is minimized.

As per claim 19, it would have been obvious to one skill in the art to associate the phase states with ranging signals so that the system can be used in radars that use ranging signals.

As per claim 20, it would have been obvious to one skill in the art to use unequal dwell times in the phase states for the reason provided above with respect to claim 13.

As per claim 21, it would have been obvious to one skill in the art to use a first dwell time for a first group of phase states and a second group of dwell time for a second group of phase states for the same reason provided above with respect to claim 13.

As per claim 22, see claim 17.

7. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori US patent No. 5,745,535 in view of Dar et al US Patent No. 4,809,006 and further in view of Dahan et al US patent Application Publication No. 2002/0070799.

As per claims 5-6, as applied to claim 1 above, Mori and Dar et al teach every feature of the claimed invention but do not explicitly teach the use of triangular wave as a basis waveform. As shown in at least in the drawing (see front page of the US Patent application publication No. 2002/0070799 and note input to summer 35), it is well known in the art to use a triangular wave as a basis waveform. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Mori and Dar et al

in order to provide Mori with the capability to generate desired carrier signal necessary to modulate the signal prior to transmission because, as known in the art, prior to any transmission, a signal has to properly modulated with a carrier so as to ensure proper transmission.

As per claim 7, the combined references teaches every feature of the claimed invention, but does not explicitly teach the additional limitations of selecting the waveform according to a desired power distribution characteristics of the transmission signal. However, selecting the waveform according to a desired power distribution characteristics of the transmission signal would have been in the purview of one skill in the art. Given that it would have been obvious to one skill in the art to select the waveform according to a desired power distribution characteristics of the transmission signal so as to ensure that negative effect of the transmission medium is compensated for in order to improved integrity of the transmission system.

8. Claims 8, 10, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori US Patent No. 5,745,535 in view of Dar et al US Patent No. 4,809,006 and further in view of Poklemba et al US Patent Application publication No. 20030141938.

As per claim 8, as applied to claim 1 above, Mori and Dar et al teach every feature of the claimed invention but do not explicitly teach the further limitation of providing at least two mutually orthogonal subcarrier modulation signals. Poklemba et al teaches a carrier generator for generating two carrier signals $\cos wct$ and $\sin wct$ separated by a phase shift of 90 degrees. Given that fact, one skill in the art would have

been motivated to generate a pair of carrier signals in the manner taught by Poklemba et al so that interference can be minimize since orthogonal carriers will ensure that the signals are separated from each other in such a way no interference can be created.

As per claim 10, Poklemba et al teaches that the carriers are separated by a predetermined phase, 90 degrees. One skill in the art would have been motivated to use such a phase shift for the reason provided with respect to claim 8 above.

As per claim 11, the Poklemba et al show an inphase carrier coswct an inphase carrier sinwct see the drawing. One skill in the art would have been motivated to use such carriers in Mori for the same reasons provided above with respect to claim 8.

As per claim 12, it would have been obvious to one skill in the art to determine the multiple amplitudes of the inphase and quadrature carriers to maintain a constant transmission signal envelope and the motivation to do so would have been to ensure that the signal level is maintained within the operational range of the amplifier that may be used to transmit the signal.

9. Claim 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori US Patent No.5,745,535 in view of Dar et al US Patent No. 4,809,006 and further in view of Dafesh et al US Patent No. 7,120,198.

As applied to claim 1 above, Mori and Dar et al teach every feature of the claimed invention but do not explicitly teach modulating a ranging signal using a subcarrier. However, as evidence by Dafesh col. 6, lines 43-45, it is well known in the art to modulate a ranging signal using a subcarrier. Given that it would have been obvious to one skill in the art to have modified Mori and Dar et al by modulating a

ranging signal using a subcarrier in order to produce desired signal not being capable of being intercepted by unauthorized users.

Response to Arguments

10. Applicant's arguments filed 12/28/10 have been fully considered but they are not persuasive. It is alleged that there are fundamental differences between communication systems and navigation systems. However, examiner notes that such differences are not positively recited in the claims. For the sake of argument, note the applied reference to Dar et al that shows a ground station 11 (navigation system) having generally the same structure as the ground station teaches by Mori and is configured to generate a modulated ranging signal.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Monday-Thursday from 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.